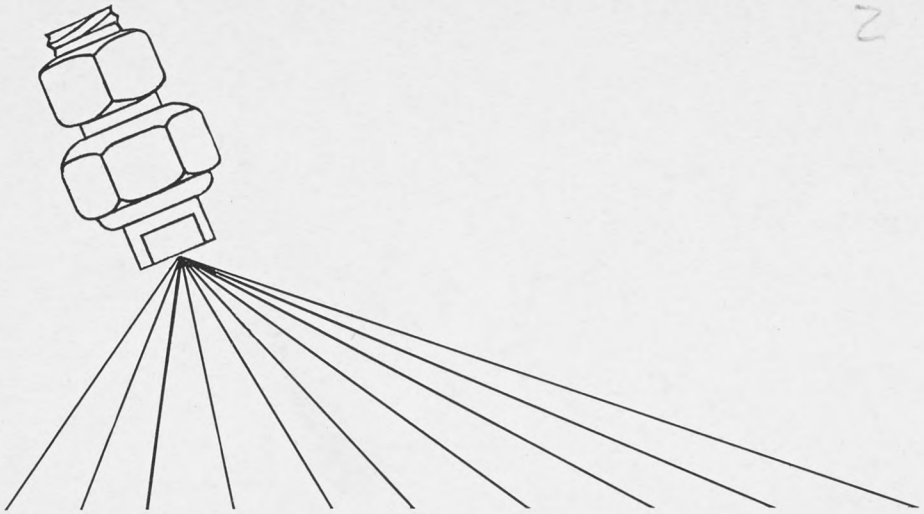
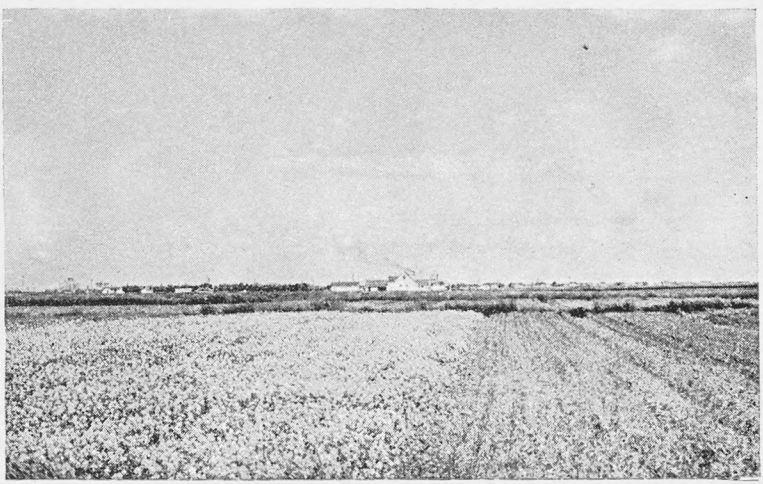


WEED CONTROL *with* CHEMICALS



Prepared by
THE SASKATCHEWAN ADVISORY WEED COUNCIL
By Authority of
Hon. I. C. NOLLET, Minister of Agriculture

WEED CONTROL WITH CHEMICALS

Chemicals have become important tools in the farmer's fight against weeds. Newer chemicals are continually being developed and tested but no chemical has yet been discovered which in itself will solve a farmer's weed problem. Other important practices are necessary to reduce weed losses. Some of these practices are:

(1) Preventing seeds from spreading.
(2) Using good clean seed.
(3) Careful and timely cultivations. Timeliness in cultivating is as important as timeliness in applying chemicals.
(4) Using recommended rotations.
(5) Using fertilizer.

The user of weed control chemicals is most interested in the benefits or returns to be expected. The actual yield increase will depend upon growing conditions, density of weed growth, the weed kill obtained by treatment and other factors. Increases as high as 10 bushels per acre have been reported as the result of successful treatment with 2,4-D under very weedy conditions. Decreases in yield have also occurred when spraying light infestations of weeds, when the crop has been sprayed at the wrong stage or where the rate used was too high.

However, there are secondary benefits derived from treatment which cannot be measured by increased yield. Fewer weed seeds in the soil, ease of harvesting crops and fewer cultivations of summerfallow following clean crops mean lower costs of production.

CHEMICALS ON THE MARKET

2,4-D

Because of its selective properties, low cost and ease of application, 2,4-D is the most widely used herbicide in Western Canada. It is important that the user be fully informed of the latest recommendations.

The esters of 2,4-D are more widely used than the amines. They are generally the most effective in Saskatchewan but greater care must be taken in applying them as they are more likely to injure cereal grains and flax than the amines. Amines work slower than esters and slightly higher rates are needed for the same results. Both dusts and sprays are available. "Fortified dusts" are not recommended over ordinary 2,4-D dusts.

MCP

This chemical is recommended for flax, oats and legumes. These crops may be damaged by treatments with 2,4-D. MCP will give good control of many common weeds with less danger to the crop.

NOTE: MCP is not recommended for the control of Russian Thistle.

MCP is available in the ester, amine, or sodium salt form. At the same rates the ester is more effective than the amine, and the amine more effective than the sodium salt.

2, 4, 5-T

A selective chemical used almost exclusively for the control of woody growth and particularly rosebush. It is usually sold in combination mixtures with 2,4-D.

TCA

This product, trichloroacetate, is used mainly for grass control, particularly couch grass and green foxtail (See pages 11 and 12). Where it is applied heavily, some soil sterility may be present up to one year after treatment.

SODIUM CHLORATE AND BORATE CHLORATE COMPOUNDS

Sodium chlorate in its pure form is an explosive chemical. Products such as Atlacide, Ercocide and Polybor-chlorate contain sodium chlorate but are less dangerous than the pure chemical. They can be used to control most perennial weeds but sterilize the soil for two years or more depending on the rate used, the rainfall and the type of soil. These chemicals are costly, therefore, their use is largely confined to small patch treatment.

BORATE AND BORATE-2,4-D COMPOUNDS

Borate and Borate 2,4-D mixtures such as Concentrated Borascu and DB Granular are used for the control of small patches of persistent perennial weeds. These compounds give good control of the weeds and often leave the grasses unharmed. Costs are usually less than monuron or chlorate and chlorate borate compounds.

MONURON (CMU)

This chemical will eradicate couch grass and toadflax. At the rates necessary monuron will sterilize the soil for at least two years and usually longer. The cost per acre is similar to that of sodium chlorate compounds.

CONTACT HERBICIDES

Selective Dinitro compounds (DNBP) will control certain annual weeds in crops such as alfalfa, peas, clover and certain truck garden crops that are too sensitive to treat with 2,4-D. The Dinitro compounds cost considerably more than 2,4-D and require special equipment and large volumes of water for application.

METHODS OF APPLICATION

Which is better — dusts or sprays?

Both are satisfactory if applied correctly.

What are the advantages of sprays?

(1) Sprays usually give quicker kills but the eventual kill is quite comparable.

(2) Slightly less acid per acre is necessary.

What are the advantages of dusts?

(1) No water is necessary and thus less time and labour are required for application.

(2) They can be applied at higher speeds.

CONTROL OF WEEDS IN GRAIN CROPS

The maximum effect of weed competition takes place early, therefore the earlier weeds are removed the greater possibility of increased yield. In addition weeds are easier to kill when they are young.

Wheat and Barley — what chemicals should be used to control weeds in these crops?

The ester of 2,4-D has proved the most satisfactory for these two crops in Saskatchewan. These crops are more tolerant to MCP during stages 1 and 3 outlined below. If it is necessary to treat during these periods, and if weeds present are susceptible to MCP, this chemical should be used.

When should wheat and barley be treated?

As soon as they have reached the three leaf stage. They may be treated up until the shot blade stage.

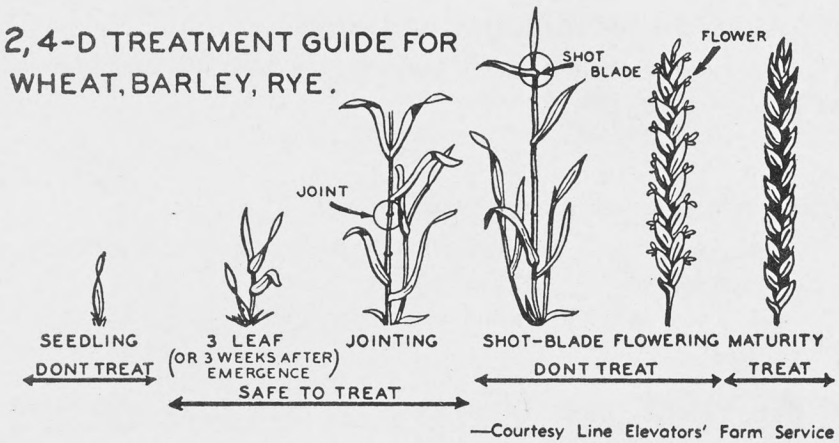
The growth of these crops can be divided into four developmental stages, each responding in a different way to 2,4-D.

(1) Emergence to 3 leaf—a highly susceptible period—treatment during this period may result in leaf and head deformities.

(2) 3 leaf to early shot blade stage—relatively resistant to damage. Treat at this stage.

(3) Early shot blade to fully headed—a highly susceptible period—treatment during this period may cause empty heads.

(4) Milk stage to full maturity—a resistant period.



—Courtesy Line Elevators' Farm Service

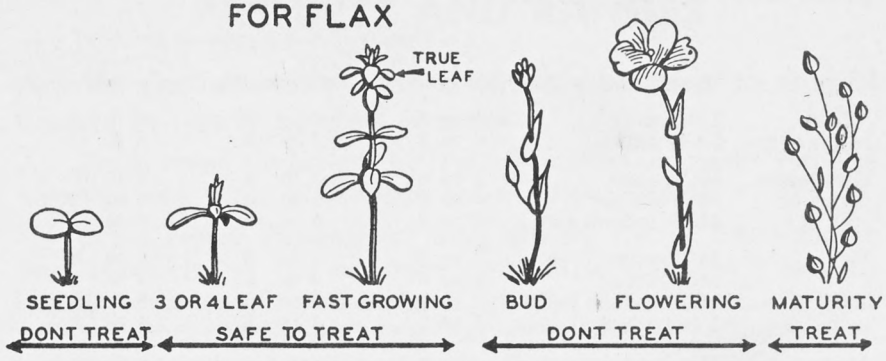
Flax — what chemicals should be used to control weeds in this crop?

Flax is more tolerant to MCP and to 2,4-D amine than to 2,4-D ester. Where control of the more resistant weeds such as Russian thistle is required, 2,4-D should be used but some damage to the flax may be expected.

TCA can be used for the control of green foxtail in flax (see page 12).

When should flax be treated?

Flax may be treated from the time the plants reach the 3 to 4 leaf stage. Severe damage will result if treatment is done after the early bud stage.



—Courtesy Line Elevators' Farm Service

Oats — what chemical should be used to control weeds in this crop?

Use MCP. Considerable damage to oats frequently occurs if 2,4-D is used. Therefore, it is not recommended except under special conditions, such as presence of weeds resistant to MCP.

When should oats be treated?

MCP can be applied to oats at all growth stages and should be applied as soon as weed growth warrants. Early treatment is usually best.

If weeds resistant to MCP are present, 2,4-D may be used during the period from emergence to the 2 leaf stage or between the 6 leaf and early shot blade stages.

What rates of chemical should be used for grain crops?

The rate will be determined by:

(a) *Stage of Weed Growth:* Annual and biennial plants are most susceptible when young. They become more resistant as they grow. Perennials are generally less susceptible than annuals and chemicals are more successful if applied at the early bud or very early bloom stage.

(b) *Kind of Weed:* There is a wide variation in the susceptibility of weeds to chemicals—(See Weed classification table page 14).

(c) *Growing Conditions:* Weeds are more susceptible to 2,4-D and MCP under conditions that favour rapid growth.

Recommended rates of 2,4-D and MCP for spraying weeds in grain crops are as follows:

Crop	*Formulation*	*Ounces of Acid Equivalent per Acre*		
		Annual Weeds		*Perennial Weeds*
		Susceptible	*Intermediate*	*Top Growth Control*
Wheat barley or rye	2,4-D ester	3 to 5	4 to 8	4 to 8
	2,4-D amine	4 to 8	5 to 10	6 to 12
Oats (wheat, barley or rye)	MCP ester	3 to 6	5 to 8	6 to 10
	MCP amine	4 to 8	5 to 10	6 to 12
	MCP sodium salt	4 to 8	5 to 10	6 to 12
Flax	MCP ester	3 to 6	4 to 8	4 to 8
	MCP amine	3 to 6	4 to 8	4 to 8
	MCP sodium salt	4 to 8	5 to 10	5 to 10
	2,4-D amine	3 to 6	4 to 8	4 to 8

Note: (a) The above rates refer to sprays. If dusts are used it is generally advisable to use up to one third more acid per acre than the rate recommended for sprays.

(b) Under drier conditions the higher rates are recommended for weeds that are intermediate in susceptibility to chemicals, and for crops that are heavily infested with weeds. These higher rates may cause crop injury but this will frequently be offset by a higher net yield and a less weedy crop.

What is meant by acid equivalent?

Each gallon of chemical contains a stated amount of pure 2,4-D acid (64 oz., 80 oz., 128 oz.) which is called the acid equivalent. The remainder of the gallon is an emulsifier or carrier. In applying the chemical one must consider only the amount of actual 2,4-D acid per acre. For example, a gallon with 64 ounces acid equivalent will do 16 acres at 4 oz. acid equivalent per acre.

Note: All rates in this bulletin refer to acid equivalent per acre.

Can the recommendations on container labels be followed?

Yes! All labels on chemicals are approved by the Canada Department of Agriculture and the claims and recommendations must be backed by experimental work. This is not necessarily true of advertisements.

CONTROL OF WEEDS IN FORAGE CROPS, PASTURES AND RANGES

Alfalfa and clovers — can chemicals be used to control weeds in newly seeded stands?

These crops should not be treated unless the legume stand is vigorous and dense and weeds are a serious threat.

Grain crops, underseeded with alfalfa, red or alsike clover (not sweet clover) can be treated with MCP amine at 2 to 4 oz. or MCP sodium salt at 3 to 6 oz. per acre. These crops are most resistant about the second true leaf stage. Selective dinitro compounds may be used at 12 to 20 oz. in 80 gallons of water per acre.

Alfalfa — can established stands be treated?

Early germinating annual weeds, such as Russian pigweed, can be controlled in established stands of alfalfa used for seed production. *Before growth starts* in the spring use 2,4-D or MCP ester at 8 to 16 oz. per acre. Treatment delayed until alfalfa is one inch high should be at reduced rates. No treatment is recommended after the alfalfa is 4 inches tall.

Sweet clover — can chemicals be used to control weeds in this crop?

Sweet clover should not be treated except where it is being grown with a companion crop for green manure purposes. It is very susceptible to 2,4-D just before and shortly after flowering, and seed yield may be greatly reduced from 2,4-D drift.

Crested wheat and brome grass — is it safe to use 2,4-D on these grasses?

New seedings of brome which have made four inches of growth may be treated with 8 oz. of 2,4-D ester per acre with no harmful effect. Crested wheat grass is more resistant than brome grass. Seed yields of grasses may be reduced from the use 2,4-D just before flowering. Seed production fields should not be treated at that time.

Pasture weeds — can chemicals be used for their control?

Selective chemicals can be used for weed and brush control on native grass pastures, waste land or cultivated pastures which

do not contain legumes. 2,4-D ester at 1 to 2 pounds is recommended. More than one application may be necessary for control (See also control of woody brush).

Is 2,4-D poisonous to livestock?

No! 2,4-D has been fed directly to livestock with no ill effects. If a pasture is treated it is advisable to keep livestock off it for a few days. The chemical may make poisonous weeds more palatable to livestock and thereby cause losses.

CONTROL OF WOODY BRUSH

What chemicals are recommended for the control of woody brush?

Only 2,4-D and 2,4,5-T are recommended for woody brush control. Special brush killing mixtures are generally a combination of 2,4-D and 2,4,5-T.

Should 2,4-D, 2,4,5-T or Mixtures be used?

Most growth encountered in Saskatchewan, with the exception of rosebush, is just as susceptible to 2,4-D as to 2,4,5-T. Since 2,4-D is cheaper it is usually recommended. It is often necessary to make two treatments; therefore, it is perhaps best to treat with 2,4-D the first year. Treatment the second year may be done with 2,4-D or, if species resistant to 2,4-D are present, a mixture of 2,4-D and 2,4,5-T. (See Woody Brush Classification). Where mixtures are used the ratio should not exceed 2 of 2,4-D to 1 of 2,4,5-T.

How should chemicals be applied for brush control and what rates should be used?

There are three main methods of killing brush and trees with chemical.

(1) *Foliage Spraying*—this consists of spraying the entire foliage and is best done as soon as the leaves are fully expanded. Use 2,4-D ester, 2,4,5-T or mixtures of the two depending on the species present. Use 2 to 4 pounds of total acid equivalent in 10 gallons of water or more per acre. Foliage must be thoroughly wetted.

(2) *Over-all dormant spraying*—this is done during the absence of foliage. A mixture of 2,4-D and 2,4,5-T should

be used. 2 to 4 pounds of the mixture should be applied in 10 to 15 gallons of diesel fuel per acre.

(3) *Basal bark and stump treatment*—For basal bark treatment apply from a height of two feet down to the ground line. For stump treatment cover the entire stump. In each case the bark at the ground line and protruding roots should be wetted to the point of run-off. A solution of 1½ pounds of total acid of 2,4-D ester or mixtures of 2,4-D and 2,4,5-T in 10 gallons of water is recommended.

Is it necessary to cut trees down before treatment?

Not for small growth, but when growth is tall, spraying may not produce good results and cutting becomes necessary. If trees are cut down treat the stump to stop regrowth.

WEED CONTROL IN HORTICULTURAL CROPS

Gardens — can chemicals be used in them?

No! There is such a difference in the susceptibility of garden vegetables that it would be impossible to treat them all alike. It would also be impossible to treat one group of vegetables without danger to other vegetables in the garden.

Special recommendations for the use of chemicals on field scale plantings of Asparagus, Beans, Beets (table and sugar), Carrots, Parsnips, Parsley, Onions, Sweet Corn and Vine crops are available on request.

Lawns — can chemicals be used for weed control on lawns?

Yes, but care must be taken to prevent chemical or chemical drift from reaching susceptible plants. New lawns may be sprayed as soon as they are four inches high. Established lawns may be sprayed whenever weeds are showing vigorous growth, preferably in late May.

To control dandelions and most broad leaved weeds in established lawns use 2,4-D amine or low volatile ester at 16 oz. of acid equivalent per acre. It is advisable to use a lower rate of 2,4-D on bent grasses as they are more susceptible than other lawn grasses. Some damage may be done to white Dutch clover but it usually recovers completely.

Will 2,4-D kill chickweed in lawns?

No! Neburon at 1/5 to 1/4 oz. per 100 square feet applied in 8 to 10 gallons of water has shown promise. Some damage to the grass may occur, but most grasses seem to recover.

Potatoes — is there a chemical for weed control in potatoes?

Four ounces of 2,4-D ester can be applied before the potatoes have emerged or about two weeks after seeding. This has given fairly satisfactory weed control. Limited experimental work indicates that the chemicals and rates used on flax can be used on potatoes when they are in the 4 to 6 leaf stage.

Small Fruits — can they be sprayed for weed control?

The following are recommendations that should be followed:

Gooseberries and Currants—Selective dinitro compounds (DNBP) at 1 to 1¼ lb. plus 30 gallons of diesel oil made up to 100 gallons with water and used at 100 gallons spray per acre is an effective herbicide. Apply during the dormant season. Oil-water mix must be kept agitated. Avoid spraying plants and exposed roots.

Raspberries—The dormant spray described above for gooseberries may be used. Raspberries are quite resistant to 2,4-D and MCP and may be treated at rates of 8 to 16 oz. acid equivalent per acre at any time except when in bloom. Care should be taken not to spray the tips of young canes. Do not use 2,4-D ester on raspberries.

Strawberries—This crop is somewhat tolerant to 2,4-D but there are varietal differences in susceptibility. Strawberries may be treated most successfully immediately after the early summer picking season. Care must be taken to avoid the drift of chemical to susceptible plants often growing in the same area. Dosage for first year plantings should not exceed 8 oz. per acre; old plantings can be sprayed safely at rates up to one pound. This recommendation applies only to the varieties "Gem" and "British Sovereign."

Recommendations for chemical weed control in Gladioli and fall planted bulbs are also available from the Departments of Agriculture or any Experimental Farm.

Shrubs and trees — can chemicals be used in them?

Care must be taken to avoid drift of weed sprays on mixed shelter belts. Similarly mixed ornamental shrubs cannot be sprayed

with chemicals used for weed control in fields. Susceptible weeds, particularly dandelions around isolated evergreens can be sprayed, but spraying should be avoided when new needles are emerging. Soil sterilants such as monuron and chlorate compounds will destroy trees and shrubs if applied within the root feeding zone.

CONTROL OF WEEDS ON UNCULTIVATED LANDS, FENCELINES AND BARNYARDS

Soil sterilants are effective for the complete removal of all growth, to prevent the spread of a troublesome weed, or to create a clean area for implement storage. Such chemicals as monuron at 2 ounces, chlorate compounds at 2 - 3 pounds, or borate-chlorate compounds at 4 pounds per 100 square feet will effectively denude small areas of vegetation. Chlorate compounds may be fire-hazardous and therefore should not be used near buildings. None of the compounds should be used near trees. Their use should also be avoided where they could seep into waters that may be used for domestic or irrigation purposes.

CONTROL OF SPECIFIC WEEDS WITH CHEMICALS

Couch Grass

Cultivation is the only feasible means of controlling field scale infestations. Small patches can be eradicated with chemicals. TCA is recommended at 3 to 4 oz. per 100 square feet on undisturbed sod. If the sod is tilled or plowed, preferably before application, a rate of 2 to 2½ ounces per 100 square feet is usually sufficient. Follow up cultivation may be necessary for a complete kill. In drier areas the effect of the chemical in the soil may extend into the next growing season.

Sodium chlorate compounds will eradicate couch grass, but the soil may remain sterile for two or more years. They may be applied at any time but are possibly more effective if used in the fall. Rates of 1 to 2 pounds per 100 square feet should be applied either dry or as a spray.

Monuron may be used on non-crop land. Early spring or late fall application seems most effective. Rates of ¾ to 1½ ounces per 100 square feet should be applied. The lower rates may be used under warm moist conditions. Cultivation the second year after application increases the effectiveness of the chemical.

Canada thistle and sow thistle

Top growth of these weeds can usually be killed and seed setting prevented in grain fields by spraying with 2,4-D at maximum dosages recommended for the crop in question. This is also true for MCP on Canada thistle.

On non-crop land esters of 2,4-D in repeated dosages of 1 pound per acre, will control, if not completely eradicate these weeds. Best results are generally obtained if spraying is done when these weeds enter the full bud stage. Soil sterilants, such as (a) sodium chlorate at 1½ to 2 pounds (b) chlorate-borate compounds at 2 to 3 pounds (c) monuron at 2 ounces per 100 square feet will kill these weeds, but their use must be limited to small patches on non-crop land.

Where intensive tillage is being carried out for control it may be discontinued about mid-July and patches of these weeds allowed to grow until they have reached the early bud stage. They should then be treated with 16 oz. of 2,4-D ester per acre. As soon as regrowth appears, tillage of patches should be started and continued until freeze up. Results from this method are usually just as successful as cultivation continued through the summer.

Green Foxtail or Wild Millet

TCA will control green foxtail, often called wild millet or pigeon grass, in flax and field peas, but cannot be used on grain crops. The TCA should be mixed at 1 pound per gallon of water and applied at 4 to 6 pounds per acre before the foxtail has developed 4 leaves. The lower rates may be used on light textured soils.

Note: TCA and 2,4-D can be applied together if necessary.

Wild oats

Numerous chemicals are tested each year but none have proven satisfactory enough for wild oat control in grain crops.

Wild Buckwheat

Heavy infestations of wild buckwheat can be materially reduced by good cultural practices. Allowing weeds to start growing in the spring, killing this crop of weeds by cultivation, and then ten days later seeding with a one-way and packers or cultivating and seeding with a drill have given excellent reductions in the stand of wild buckwheat.

Chemicals give best results when the wild buckwheat is in the first or second true leaf stage. In wheat and barley, apply two 5 ounce treatments of 2,4-D ester one week apart. If the wild buckwheat is in the first or second true leaf stage but the grain crop is too small for safe treatment with 2,4-D, use MCP ester. In oats, use MCP ester at 5 ounces for both applications.

Tartary Buckwheat

Tillage and cropping practices used for other annual weeds apply also to tartary buckwheat. For chemical control in wheat and barley, treat with 6 to 8 ounces of 2,4-D ester per acre as soon as crop growth permits. Low volatile 2,4-D esters give better control. MCP at 12 to 16 ounces per acre is better for oats and flax. These rates will reduce growth and seed set but will not eradicate the weed.

Persistent perennial weeds — leafy spurge, hoary cress, toadflax, Russian knapweed bladder campion

Soil sterilant chemicals are recommended for small scattered patches. Compounds such as Atlacide or Polybor-chlorate at 3½ pounds, Monuron at 2 to 3 ounces, Concentrated Borascu at 3 to 4 pounds, or DB Granular at 2 to 3 pounds per 100 square feet are recommended. Care should be taken to treat not only the patch, but also a six foot margin around the patch. The treated area should not be worked for at least two years. If regrowth appears the area should be retreated. If seedlings appear the patch may be tilled once to kill them, or treated with a heavy dosage of 2,4-D.

The top growth can often be killed with heavy doses of 2,4-D but regrowth from roots takes place almost immediately.

Where leafy spurge and hoary cress are growing in grain crops, 6 to 8 ounces of 2,4-D ester per acre should be used to prevent seed setting. If the infested land is seeded to grass, repeated applications of 2,4-D ester at not less than 1 pound per acre will give effective control.

Field Bindweed

Top growth of field bindweed may be controlled in growing crops by spraying with esters of 2,4-D or MCP at rates recommended for the crops. After the crop has been removed, apply 12 ounces per acre of 2,4-D or MCP ester and allow a two week period before beginning the usual fall tillage.

During the fallow year, cultivate normally until mid-July with a disk-type implement. Allow the patches of bindweed to grow until mid-August and spray with 2,4-D ester at a rate of 12 to 16 oz. per acre. Resume normal tillage operations after a three-week interval.

Small patches can be killed with the soil sterilants mentioned for persistent perennials.

WEED CLASSIFICATION ACCORDING TO RESPONSE TO 2,4-D AND MCP

Summary of common weeds treated with 2,4-D and MCP in growing crops.

Wild Mustard—can be killed at any time up to advanced flowering stage.

Stinkweed and Lamb's Quarters—can be killed any time before flowering. Becomes resistant after flower formation.

Russian Thistle and Red-root Pigweed—killed or stunted at very early stages. Rapidly become resistant. Note: MCP is not recommended for control of Russian thistle.

Canada Thistle and Perennial Sow Thistle—Top growth stunted or destroyed by rates of 2,4-D recommended for use in growing crops. Repeated heavy dosages required for eradication on uncropped land.

Hemp Nettle—is controllable with MCP at rates of 6-8 ounces per acre.

A. Annuals and Winter Annuals

Susceptible—can be killed by a relatively low dosage of 2,4-D at early growth stages. Under dry conditions and/or as they approach seed setting, these weeds become Intermediate or Resistant in reaction.

Ball Mustard	Hare's Ear Mustard	Sunflowers
Blue-Bur	Indian Mustard	Tumbling Mustard
Common Ragweed	Lamb's Quarters	Wild Mustard
False Ragweed	Russian Pigweed	Wormseed Mustard
Great Ragweed	Stinkweed	Wild Radish

Intermediate—these weeds require higher dosages than do those in the susceptible group. Under poor growing conditions and/or with advancing age, members of this group become Resistant.

Annual Sow Thistle	Flixweed	Purslane
Cocklebur	Peppergrass	Red-root Pigweed
Common Chickweed	Pine-apple weed	Spear-leaved Goose-foot
Common Groundsel	Wild Buckwheat	
Dog Mustard	Prickly Lettuce	Tansy Mustard
Russian Thistle (Resistant to MCP).		Tartary Buckwheat

Resistant—killing with 2,4-D or MCP not feasible.

Cow Cockle	Purple Cockle	Grasses—
Knotweed	Stinking Mayweed	Barnyard Grass
Night-flowering Catchfly	Wild Oats	Darnel
		Downy Brome
		Green Foxtail
Hemp Nettle (Intermediate to MCP).		Yellow Foxtail

B. Biennials and Herbaceous Perennials

Susceptible—top growth and roots are often killed by one application of 2,4-D or MCP.

Burdock	Dandelion (in lawns)	Gumweed
Common plantain	Goatsbeard	Sweet Clover

Intermediate—top growth may be killed with 2,4-D or MCP but more than one application is required for eradication.

Alfalfa	Curled Dock	Perennial Sow Thistle
Blue Lettuce	Dandelion (in fields)	Prairie Thistle
Biennial Wormwood	Field Bindweed	Stinging Nettle
Canada Thistle	Hedge Bindweed	Tall Buttercup

Resistant — eradication by 2,4-D/or MCP probably not feasible.

Bladder Campion	Leafy Spurge	Shrubby Cinquefoil
Bracken	Milkweed	Tansy
Cacti	Ox-eye Daisy	Toadflax
Grasses	Pasture Sage	White Cockle
Hoary Cress	Poverty Weed	Wild Licorice
Horsetail	Russian Knapweed	Yarrow

Controllable in growing crops—Top growth may be stunted or destroyed by doses of 2,4-D or MCP recommended for use in crops.

Alfalfa	Curled Dock	Horsetail
Biennial Wormwood	Field Bindweed	Leafy Spurge
Blue Lettuce	Goatsbeard	Perennial Sow Thistle
Burdock	Hedge Bindweed	Sweet Clover
Canada Thistle	Hoary Cress	

WOODY PLANTS CLASSIFIED ACCORDING TO THEIR RESPONSE TO HERBICIDES

Group I—Susceptible to 2,4-D

Caragana	Lilac	Saskatoon
Chokecherry	Maple, Manitoba	Snowberry, Western
Currants	Pincherry	Spiraea
Hazelnut	Poplar, Aspen	Willows
Honeysuckle	Poplar, Balsam	Wolf Willow

Group II—Resistant to 2,4-D

Blackberry Oak Raspberry Rose

Group III—Apparently more susceptible to 2,4,5-T than to 2,4-D

Ash Bearberry Blackberry Dogwood
Hawthorn Raspberry Rose

WARNING REGARDING THE USE OF 2,4-D

1. 2,4-D is a non-poisonous, non-inflammable chemical. It is no more corrosive to metal and rubber than water. Excessive breathing of the fumes may cause nausea to some operators.
2. When treating grain fields, care must be taken that dust or spray does not come in contact with shelter belts, garden vegetables or other susceptible plants. Drift of chemical from both dusting and spraying may cause damage for considerable distance downwind from the machine. Most vegetable crops are highly susceptible to 2,4-D.

3. Use only amines or low volatile esters of 2,4-D on or near shrubs, flowers or shelterbelts. This should be done with a sprinkling can in preference to a knapsack sprayer.
4. 2,4-D is extremely difficult to remove from spraying and dusting equipment. Such equipment should not be used to spray insecticides on susceptible plants.
5. Do not leave 2,4-D containers near susceptible plants because of danger from fumes.
6. 2,4-D will not deteriorate in storage even if temperatures drop below freezing. After storage, shake or stir the chemical thoroughly before using. Large drums of 2,4-D may be mixed with a gasoline toggle pump.

* * * * *

REMEMBER!

CHEMICALS ARE MADE TO KILL PLANTS

BE SURE THAT THEY KILL ONLY UNDESIRABLE PLANTS

ADDITIONAL INFORMATION ON WEEDS

Weeds of Canada ..... $1.00 per copy
Farm Weeds Illustrated in Colour ..... $1.00 per copy
Poisonous Plants of The Canadian Prairies Pub. 900
Available from Queen's Printer—Ottawa.

* * * * *

Guide to Farm Practice in Saskatchewan

Wild Oat Control by Cultural Methods

Leafy Spurge

Toadflax

Tartary Buckwheat

Green Foxtail

Available from Agricultural Representatives,
Extension Department—University of Saskatchewan,
Experimental Farms,
Saskatchewan Department of Agriculture, Regina.

* * * * *

Editorial Committee

K. F. BEST—Agronomist, Experimental Farm, Swift Current, Sask.

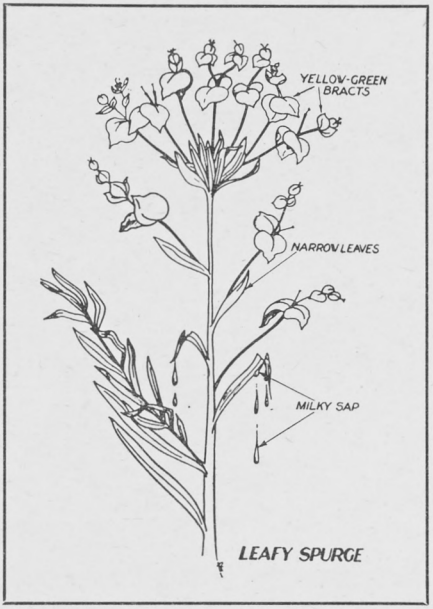
E. V. MCCURDY—Agronomist, Experimental Farm, Indian Head, Sask.

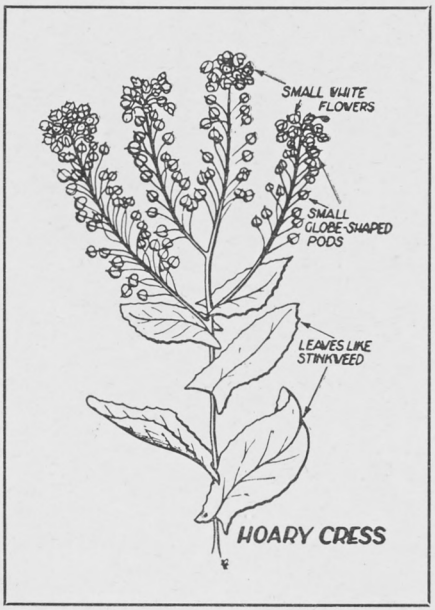
D. E. FORSBERG—Agronomist, Experimental Farm, Scott, Sask.

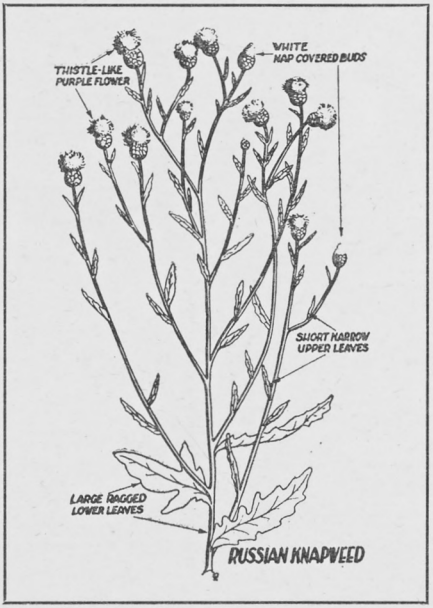
H. W. LEGGETT—Superintendent, Experimental Farm, Regina, Sask.

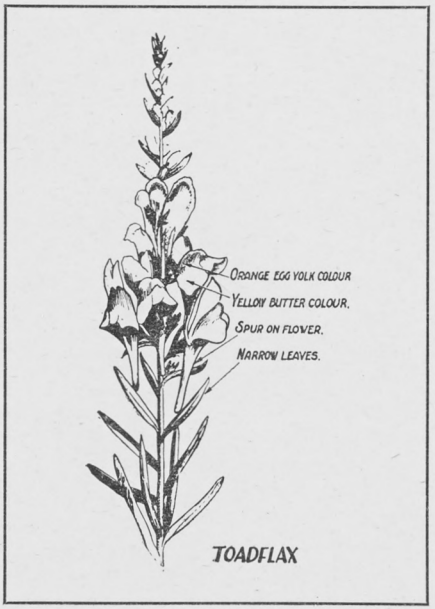
T. V. BECK—Weed Control Representative, Saskatchewan Department of Agriculture.

PERSISTENT PERENNIALS









Sketches by E. Roberts, P.F.R.A.